

SEQUENCE LISTING

- <110> CPRO-DLO  
Agriculture and Agri-food Canada
- <120> Use of the BNM3 Transcriptional Activator to Control  
Plant Embryogenesis and Regeneration Processes
- <130> 07-334064
- <140>  
<141>
- <150> EP 99201745.9-2106  
<151> 1999-06-02
- <160> 14
- <170> PatentIn Ver. 2.1
- <210> 1  
<211> 2014  
<212> DNA  
<213> Brassica napus

<400> 1  
gttcactctct cttctttaag accaaaaacct ttttctctct ctcttcatgc atgaacccta 60  
actaagttct tcttctttta ccttttacca agaactcgtt agatcactct ctgaactcaa 120  
tgaataataa ctggttaggc ttttctctct ctcttatga acaaaatcac catcgtaagg 180  
acgtctactc ttccaccacc acaaccgtcg tagatgtcgc cggagagtac tgttacgac 240  
cgaccgctgc ctccgatgag tcttcagcca tccaaacatc gtttctctct ccttttggtg 300  
tcgtctgoga tgctttcacc agagacaaca atagtcactc ccgagattgg gacatcaatg 360  
gttgtgcatg caataacatc cacaacgatg agcaagatgg accaaagctt gagaatttcc 420  
ttggcgcgac caccacgatt tacaacacca acgaaaacgt tggagatgga agtggaagtg 480  
gctgttatgg aggaggagac ggtggtggtg gctcactagg actttcgatg ataaagacat 540  
ggctgagaaa tcaaccctg gataatggtg ataataaga aaatggcaat gctgcaaaaag 600  
gcctgtccct ctcaatgaac tcatctactt cttgtgataa caacaacgac agcaataaca 660  
acgttggtgc ccaagggaag actattgatg atagcgttga agctacaccg aagaaaacta 720  
ttgagagttt tggacagagg acgtctatat accgcggtgt tacaaggcat cgggtggacag 780  
gaagatatga ggcacattta tgggataata gttgtaaaag agaaggccaa acgcgcaaag 840  
gaagacaagt ttatttgga ggttatgaca aagaagaaaa agcagctagg gcttatgatt 900  
tagccgcact caagtattgg ggaaccacca ctactactaa cttccccatg agcgaatatg 960  
aaaaagaggt agaagagatg aagcacatga caaggcaaga gtatgttgcc tctactgcga 1020  
ggaaaagtag tggtttctct cgtggtgcat cgatttatcg tggagtaaca agacatcacc 1080  
aacatggaag atggcaagct aggataggaa gagtcgcccg taacaaagac ctctacttgg 1140  
gaacttttgg cacacaagaa gaagctgcag aggcatacga cattgcggcc atcaaattca 1200  
gaggattaac cgcagtgact aacttcgaca tgaacagata caacgttaaa gcaatcctcg 1260  
aaagccctag tcttctctatt ggtagcgccg caaaacgtct caaggaggct aaccgtccgg 1320  
ttccaagtat gatgatgac agtaataacg tttcagagag tgagaatagt gctagcgggt 1380  
ggcaaaacgc tcggttcag catcatcagg gagtagattt gagcttattg caccaacatc 1440  
aagagaggta caatggttat tattacaatg gagaaaactt gtcttcggag agtcttaggg 1500  
cttgtttcaa acaagaggat gatcaacacc atttcttgag caacacgcag agcctcatga 1560  
ctaatatcga tcatcaaagt tctgtttcgg atgattcggt tactgtttgt ggaaatgttg 1620  
ttggttatgg tggttatcaa ggatttgcag ccccggttaa ctgcgatgcc tacgctgcta 1680

09980364.040802

gtgagtttga ttataacgca agaaaccatt attactttgc tcagcagcag cagacccagc 1740  
 agtcgccagg tggagatttt cccgcggcaa tgacgaataa tgttggctct aatatgtatt 1800  
 accatgggga aggtggtgga gaagttgctc caacatttac agtttgggaac gacaattaga 1860  
 aaaaatagtt aaagatcttt agttatatgc gttgttgtgt gctggtgaac agtgtgatac 1920  
 tttgattatg tttttttctt tctctttttc tttttcttgg ttaatttctt aagacttatt 1980  
 tttagtttcc attagttgga taaattttca gact 2014

<210> 2

<211> 579

<212> PRT

<213> Brassica napus

<400> 2

Met	Asn	Asn	Asn	Trp	Leu	Gly	Phe	Ser	Leu	Ser	Pro	Tyr	Glu	Gln	Asn
1				5					10					15	
His	His	Arg	Lys	Asp	Val	Tyr	Ser	Ser	Thr	Thr	Thr	Thr	Val	Val	Asp
			20					25					30		
Val	Ala	Gly	Glu	Tyr	Cys	Tyr	Asp	Pro	Thr	Ala	Ala	Ser	Asp	Glu	Ser
	35						40					45			
Ser	Ala	Ile	Gln	Thr	Ser	Phe	Pro	Ser	Pro	Phe	Gly	Val	Val	Val	Asp
	50					55					60				
Ala	Phe	Thr	Arg	Asp	Asn	Asn	Ser	His	Ser	Arg	Asp	Trp	Asp	Ile	Asn
65					70					75				80	
Gly	Cys	Ala	Cys	Asn	Asn	Ile	His	Asn	Asp	Glu	Gln	Asp	Gly	Pro	Lys
				85					90					95	
Leu	Glu	Asn	Phe	Leu	Gly	Arg	Thr	Thr	Thr	Ile	Tyr	Asn	Thr	Asn	Glu
		100					105						110		
Asn	Val	Gly	Asp	Gly	Ser	Gly	Ser	Gly	Cys	Tyr	Gly	Gly	Gly	Asp	Gly
		115					120					125			
Gly	Gly	Gly	Ser	Leu	Gly	Leu	Ser	Met	Ile	Lys	Thr	Trp	Leu	Arg	Asn
	130					135					140				
Gln	Pro	Val	Asp	Asn	Val	Asp	Asn	Gln	Glu	Asn	Gly	Asn	Ala	Ala	Lys
145				150						155					160
Gly	Leu	Ser	Leu	Ser	Met	Asn	Ser	Ser	Thr	Ser	Cys	Asp	Asn	Asn	Asn
			165						170					175	
Asp	Ser	Asn	Asn	Asn	Val	Val	Ala	Gln	Gly	Lys	Thr	Ile	Asp	Asp	Ser
			180					185					190		
Val	Glu	Ala	Thr	Pro	Lys	Lys	Thr	Ile	Glu	Ser	Phe	Gly	Gln	Arg	Thr
	195						200					205			
Ser	Ile	Tyr	Arg	Gly	Val	Thr	Arg	His	Arg	Trp	Thr	Gly	Arg	Tyr	Glu
	210					215					220				

09980364.040802

3/15

Ala	His	Leu	Trp	Asp	Asn	Ser	Cys	Lys	Arg	Glu	Gly	Gln	Thr	Arg	Lys	
225					230					235					240	
Gly	Arg	Gln	Val	Tyr	Leu	Gly	Gly	Tyr	Asp	Lys	Glu	Glu	Lys	Ala	Ala	
			245						250					255		
Arg	Ala	Tyr	Asp	Leu	Ala	Ala	Leu	Lys	Tyr	Trp	Gly	Thr	Thr	Thr	Thr	
			260					265					270			
Thr	Asn	Phe	Pro	Met	Ser	Glu	Tyr	Glu	Lys	Glu	Val	Glu	Glu	Met	Lys	
		275					280					285				
His	Met	Thr	Arg	Gln	Glu	Tyr	Val	Ala	Ser	Leu	Arg	Arg	Lys	Ser	Ser	
		290				295					300					
Gly	Phe	Ser	Arg	Gly	Ala	Ser	Ile	Tyr	Arg	Gly	Val	Thr	Arg	His	His	
305					310					315					320	
Gln	His	Gly	Arg	Trp	Gln	Ala	Arg	Ile	Gly	Arg	Val	Ala	Gly	Asn	Lys	
				325					330					335		
Asp	Leu	Tyr	Leu	Gly	Thr	Phe	Gly	Thr	Gln	Glu	Glu	Ala	Ala	Glu	Ala	
			340					345					350			
Tyr	Asp	Ile	Ala	Ala	Ile	Lys	Phe	Arg	Gly	Leu	Thr	Ala	Val	Thr	Asn	
		355					360					365				
Phe	Asp	Met	Asn	Arg	Tyr	Asn	Val	Lys	Ala	Ile	Leu	Glu	Ser	Pro	Ser	
		370				375					380					
Leu	Pro	Ile	Gly	Ser	Ala	Ala	Lys	Arg	Leu	Lys	Glu	Ala	Asn	Arg	Pro	
385					390					395					400	
Val	Pro	Ser	Met	Met	Met	Ile	Ser	Asn	Asn	Val	Ser	Glu	Ser	Glu	Asn	
				405					410					415		
Ser	Ala	Ser	Gly	Trp	Gln	Asn	Ala	Ala	Val	Gln	His	His	Gln	Gly	Val	
			420					425					430			
Asp	Leu	Ser	Leu	Leu	His	Gln	His	Gln	Glu	Arg	Tyr	Asn	Gly	Tyr	Tyr	
		435				440						445				
Tyr	Asn	Gly	Gly	Asn	Leu	Ser	Ser	Glu	Ser	Ala	Arg	Ala	Cys	Phe	Lys	
		450			455						460					
Gln	Glu	Asp	Asp	Gln	His	His	Phe	Leu	Ser	Asn	Thr	Gln	Ser	Leu	Met	
465					470					475					480	
Thr	Asn	Ile	Asp	His	Gln	Ser	Ser	Val	Ser	Asp	Asp	Ser	Val	Thr	Val	
				485					490					495		
Cys	Gly	Asn	Val	Val	Gly	Tyr	Gly	Gly	Tyr	Gln	Gly	Phe	Ala	Ala	Pro	
			500					505					510			
Val	Asn	Cys	Asp	Ala	Tyr	Ala	Ala	Ser	Glu	Phe	Asp	Tyr	Asn	Ala	Arg	

09980364 040802

515

520

525

Asn His Tyr Tyr Phe Ala Gln Gln Gln Thr Gln Gln Ser Pro Gly  
530 535 540

Gly Asp Phe Pro Ala Ala Met Thr Asn Asn Val Gly Ser Asn Met Tyr  
545 550 555 560

Tyr His Gly Glu Gly Gly Gly Glu Val Ala Pro Thr Phe Thr Val Trp  
565 570 575

Asn Asp Asn

<210> 3

<211> 2011

<212> DNA

<213> Brassica napus

<400> 3

```

ttcttctttt acccttttacc aagaactcgt tagatcattt tctgaactcg atgaataata 60
actgggttagg cttttctctc tctccttatg aacaaaatca ccacgtaag gacgtctgct 120
cttccaccac cacaaccgcc gtagatgtcg ccggagagta ctgttacgat ccgaccgctg 180
cctccgatga gtcttcagcc atccaaacat cgtttctctc tccctttggg gtcgtcctcg 240
atgctttcac cagagacaac aatagtcact cccgagattg ggacatcaat ggtagtgcac 300
gtaataacat ccacaatgat gagcaagatg gacccaaaact tgagaatttc cttggccgca 360
ccaccacgat ttacaacacc aacgaaaacg ttggagatat cgatggaagt ggggtgttatg 420
gaggaggaga cgggtgggtggg ggctcactag gactttcgat gataaagaca tggctgagaa 480
atcaaccctg ggataatggt gataatcaag aaaatggcaa tgggtgcaaaa ggcctgtccc 540
tctcaatgaa ctcatctact tcttgtgata acaacaacta cagcagtaac aacctgttg 600
ccaaggga gactattgat gatagcgttg aagctacacc gaagaaaact attgagagtt 660
ttggacagag gacgtctata taccgcggtg ttacaaggca tcgggtggaca ggaagatatg 720
aggcacattt atgggataat agttgtaaac gagaaggcca aacgcgcaaa ggaagacaag 780
tttatttggg aggttatgac aaagaagaaa aagcagctag ggcttatgat ttagccgcac 840
tcaagtattg gggaaccacc actactacta acttccccat gagcgaatat gagaaagaga 900
tagaagagat gaagcacatg acaaggcaag agtatgttgc ctacttcgc aggaaaagta 960
gtggtttctc tcgtggtgca tcgatttatc gtggagtaac aagacatcac caacatggaa 1020
gatggcaagc taggatagga agagtcgccg gtaacaaaga cctctacttg ggaacttttg 1080
gcacacaaga agaagctgca gaggcatacg acattgcggc catcaaattc agaggattaa 1140
ccgcagtgac taacttcgac atgaacagat acaacgttaa agcaatctc gaaagcccta 1200
gtcttcctat tggtagcgcc gcaaaacgtc tcaaggaggc taaccgtccg gttccaagta 1260
tgatgatgat cagtaataac gtttcagaga gtgagaataa tgctagcggg tggcaaaacg 1320
ctgcggttca gcatcatcag ggagtagatt tgagcttatt gcagcaacat caagagaggt 1380
acaatgggta ttattacaat ggaggaaact tgtcttcgga gagtgttagg gcttgtttca 1440
aacaagagga tgatcaacac catttcttga gcaacacgca gagectcatg actaatatcg 1500
atcatcaaag ttctgtttca gatgattcgg ttactgtttg tggaaatggt gttggttatg 1560
gtggttatca aggatttgca gccccggtta actgcgatgc ctacgtgct agtgagtttg 1620
actataacgc aagaaacat tattactttg ctacgcagca gcagaccag cattcgccag 1680
gaggagattt tcccgcgga atgacgaata atgttggtc taatatgtat taccatgggg 1740
aagggtggg agaagttgct ccaacattta cagtttgga cgacaattag aaataatagt 1800
taaagatctt tagttatatg cgttggttggt tgggtgttgaa cagtttgata ctttgattat 1860
gttttttttt ctctttttca ttttggttgg tagtttctta agacttattt tttgtttcca 1920
ttagttggat aaattttcgg acttaagggt cacttctggt ctgacttctg tctaatacag 1980
aaaagttttc ataaaaaaaa aaaaaaaaaa a 2011

```

09980364.040800

&lt;210&gt; 4

&lt;211&gt; 579

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 4

Met Asn Asn Asn Trp Leu Gly Phe Ser Leu Ser Pro Tyr Glu Gln Asn  
 1 5 10 15

His His Arg Lys Asp Val Tyr Ser Ser Thr Thr Thr Thr Val Val Asp  
 20 25 30

Val Ala Gly Glu Tyr Cys Tyr Asp Pro Thr Ala Ala Ser Asp Glu Ser  
 35 40 45

Ser Ala Ile Gln Thr Ser Phe Pro Ser Pro Phe Gly Val Val Val Asp  
 50 55 60

Ala Phe Thr Arg Asp Asn Asn Ser His Ser Arg Asp Trp Asp Ile Asn  
 65 70 75 80

Gly Cys Ala Cys Asn Asn Ile His Asn Asp Glu Gln Asp Gly Pro Lys  
 85 90 95

Leu Glu Asn Phe Leu Gly Arg Thr Thr Thr Ile Tyr Asn Thr Asn Glu  
 100 105 110

Asn Val Gly Asp Gly Ser Gly Ser Gly Cys Tyr Gly Gly Gly Asp Gly  
 115 120 125

Gly Gly Gly Ser Leu Gly Leu Ser Met Ile Lys Thr Trp Leu Arg Asn  
 130 135 140

Gln Pro Val Asp Asn Val Asp Asn Gln Glu Asn Gly Asn Ala Ala Lys  
 145 150 155 160

Gly Leu Ser Leu Ser Met Asn Ser Ser Thr Ser Cys Asp Asn Asn Asn  
 165 170 175

Asp Ser Asn Asn Asn Val Val Ala Gln Gly Lys Thr Ile Asp Asp Ser  
 180 185 190

Val Glu Ala Thr Pro Lys Lys Thr Ile Glu Ser Phe Gly Gln Arg Thr  
 195 200 205

Ser Ile Tyr Arg Gly Val Thr Arg His Arg Trp Thr Gly Arg Tyr Glu  
 210 215 220

Ala His Leu Trp Asp Asn Ser Cys Lys Arg Glu Gly Gln Thr Arg Lys  
 225 230 235 240

Gly Arg Gln Val Tyr Leu Gly Gly Tyr Asp Lys Glu Glu Lys Ala Ala  
 245 250 255

09980364 040802

6/15

Arg Ala Tyr Asp Leu Ala Ala Leu Lys Tyr Trp Gly Thr Thr Thr Thr  
260 265 270

Thr Asn Phe Pro Met Ser Glu Tyr Glu Lys Glu Val Glu Glu Met Lys  
275 280 285

His Met Thr Arg Gln Glu Tyr Val Ala Ser Leu Arg Arg Lys Ser Ser  
290 295 300

Gly Phe Ser Arg Gly Ala Ser Ile Tyr Arg Gly Val Thr Arg His His  
305 310 315 320

Gln His Gly Arg Trp Gln Ala Arg Ile Gly Arg Val Ala Gly Asn Lys  
325 330 335

Asp Leu Tyr Leu Gly Thr Phe Gly Thr Gln Glu Glu Ala Ala Glu Ala  
340 345 350

Tyr Asp Ile Ala Ala Ile Lys Phe Arg Gly Leu Thr Ala Val Thr Asn  
355 360 365

Phe Asp Met Asn Arg Tyr Asn Val Lys Ala Ile Leu Glu Ser Pro Ser  
370 375 380

Leu Pro Ile Gly Ser Ala Ala Lys Arg Leu Lys Glu Ala Asn Arg Pro  
385 390 395 400

Val Pro Ser Met Met Met Ile Ser Asn Asn Val Ser Glu Ser Glu Asn  
405 410 415

Ser Ala Ser Gly Trp Gln Asn Ala Ala Val Gln His His Gln Gly Val  
420 425 430

Asp Leu Ser Leu Leu His Gln His Gln Glu Arg Tyr Asn Gly Tyr Tyr  
435 440 445

Tyr Asn Gly Gly Asn Leu Ser Ser Glu Ser Ala Arg Ala Cys Phe Lys  
450 455 460

Gln Glu Asp Asp Gln His His Phe Leu Ser Asn Thr Gln Ser Leu Met  
465 470 475 480

Thr Asn Ile Asp His Gln Ser Ser Val Ser Asp Asp Ser Val Thr Val  
485 490 495

Cys Gly Asn Val Val Gly Tyr Gly Gly Tyr Gln Gly Phe Ala Ala Pro  
500 505 510

Val Asn Cys Asp Ala Tyr Ala Ala Ser Glu Phe Asp Tyr Asn Ala Arg  
515 520 525

Asn His Tyr Tyr Phe Ala Gln Gln Gln Gln Thr Gln Gln Ser Pro Gly  
530 535 540

Gly Asp Phe Pro Ala Ala Met Thr Asn Asn Val Gly Ser Asn Met Tyr

09980364.040802

7/15

545

550

555

560

Tyr His Gly Glu Gly Gly Gly Glu Val Ala Pro Thr Phe Thr Val Trp  
565 570 575

Asn Asp Asn

<210> 5

<211> 4873

<212> DNA

<213> Brassica napus

<220>

<221> intron

<222> (1846)..(2298)

<220>

<221> intron

<222> (2720)..(2952)

<220>

<221> intron

<222> (3036)..(3160)

<220>

<221> intron

<222> (3170)..(3314)

<220>

<221> intron

<222> (3404)..(3553)

<220>

<221> intron

<222> (3628)..(3797)

<220>

<221> intron

<222> (3849)..(3961)

<220>

<221> intron

<222> (4039)..(4148)

<220>

<221> misc\_feature

<222> (1620)..(1622)

<223> start codon

<220>

<221> misc\_feature

<222> (4856)..(4858)

<223> stop codon

20230410 19250860

&lt;400&gt; 5

atctctccac cgattcggtta cccagtgctt gaaaatatga tgactacgaa tcaattaaat 60  
 ggagaagctc cactgcttgt gtaggtggaa gctcaagcaa caaccggaaa cctcggcgtt 120  
 atcgagggtt agcatcggtta tttgccaaaa tttccgccgc agagatgaaa cgattcaaga 180  
 gaaaccctca aatagggttag ccataaaaca gtgaattagt atgatttaag agataagaag 240  
 agaagatgag ttcaagaaaa gaaatactca catctattta tactgtttac acaccgcctt 300  
 tcagatctaa gcaaagcatt gaagatgaat cgtggaggag agttaatagg atttaacaca 360  
 aagccattaa ccaaaccgtt gcaggtcggg agacgaaccg caaaagtcac gcctagccgt 420  
 cgcacgaaga ggagcgtatga atttcgtttt ctgcctgcag tcgtattagg gatagacgga 480  
 gctcattatc gttgggcccgg aaacacttct aatctcacag cccatgaaca cactaaagaa 540  
 cgaaaccgaa aatgtttgaa gtttaatgaa acgtgcgggt tgcccttatgg acacatgtca 600  
 ttacgatatg aaatgattta tctacgtgga tcataggtgt ctctctaagg agagagcaaa 660  
 cctatacttt atataaatag atttgatca ttctaaggagg tgtttaagat ttttgcataa 720  
 atattaaaaa aaaatacaaaa tttttatgta attagttttg gttacataaa ataacattaa 780  
 ataaaattaa ttcaaccaat aaaaaatac ggtattttat aattgggtcaa aaataaaaaat 840  
 aaaacattaa atttcaccta gaattacgag aatgtcactt attttgaaac aaaatcaaaa 900  
 tctttaaaca tcaattaaac tgatacggat ggagtatata tctttacaga gaacatatat 960  
 atatgttttt cttgtaagcg tccatctctt cttagtcatg tagttcaaata accagctgca 1020  
 gtaaaacctt gaataattga atttggtgta aaatattcga agcgactact gcacgtttgg 1080  
 aagcaaaacg ccaaacgcaa tcgctcgctc ggtcataggg tcacacatac acatgtgact 1140  
 agcattatgg gtcttaattc aacagcagat gattttggga tttattatta gttctcgtgt 1200  
 tactctcact ttaacacaaa gtcactaacc ttattttacac atgaagagag gtttgaaagg 1260  
 gcttttgact gattaattat aatgtattaa accaaactag aattaagaga ttaggcattg 1320  
 aattacatta ccaccaccac ccaccattca aaccgaccaa tacatctcca cagttttcaa 1380  
 gtaaaacaac ttttttttgt tgttccttcg gaatttaaat aaatattcgt ttatataaat 1440  
 gcgcgatgata tgacgcctcg gaagaaatga aacattatat ctttgacttt tcttctccta 1500  
 gttcatctct cttcttttaag accaaaacct ttttctctct ctcttcatgc atgaacctta 1560  
 actaagttct tcttctttta cctttttacca agaactcgtt agatcactct ctgaactcaa 1620  
 tgaataataa ctgggttaggc ttttctctct ctcttatga acaaaatcac catcgtaagg 1680  
 acgtctactc ttccaccacc acaaccgtcg tagatgtcgc cggagagtag tgttacgatc 1740  
 cgaccgctgc ctccgatgag tcttcagcca tccaaacatc gtttcttctt ccttttggtg 1800  
 tcgctcgctc tgctttcacc agagacaaca atagtcactc ccgaggttat tgtttttagaa 1860  
 ctacttgttt ttttttgatt tgtttatattg ttttagtttcc tcttcttcca atgcgtagaa 1920  
 caaagaccaa tacacacgca cgcatactag ccctattttt tctttgggct tattttatcga 1980  
 tttcatttat tttgagaata tcaatgtgtg ggggttgatg tttgtttgca tatagtaata 2040  
 ctaaaacata tgccagttat acatagattt tttttaaaga tatacatgga tatgaaatga 2100  
 aatttgacat ttctctcttt attcaatata ataatatgat cacatacatg tgtacctttt 2160  
 gatttgataa tttgtttctt acagttgaag gagagaataa ccaaataccc atttgatatat 2220  
 tatagatcgg tgatgaaaag taaatttaac aaattatgat aatataggcc attaatcttt 2280  
 gatttttttt ctttatagat tgggacatca atggttgtgc atgcaataac atccacaacg 2340  
 atgagcaaga tggaccaaag cttgagaatt tccttgccg caccaccacg atttacaaca 2400  
 ccaacgaaaa cggttgagat ggaagtggaa gtggctgtta tggaggagga gacggtggtg 2460  
 gtggctcact aggactttcg atgataaaga catggctgag aaatcaaccg gtggataatg 2520  
 ttgataatca agaaaatggc aatgctgcaa aaggcctgtc cctctcaatg aactcatcta 2580  
 cttcttgatg taacaacaac gacagcaata acaacgttgt tgcccaaggg aagactattg 2640  
 atgatagcgt tgaagctaca ccgaagaaaa ctattgagag ttttgagacag aggacgtcta 2700  
 tataccgagg tgttacaagg tgcccttcat ttatttaatt aaaatgtgta aaatgtcgtc 2760  
 tgaattgtta tcttcttggt aaagtctggg acattgatct aatggctctg ttgcgagagt 2820  
 gctaccgaat ggtccttgat atatagtatc aaagagagat attgttatta tgggcttata 2880  
 tagaataata catatatata tatatatata tggtagctgt tgatgacatg tatgttcgta 2940  
 ttaaagataa aggcacgtgt ggacaggaag atatgaggca catttatggg ataatagttg 3000  
 taaaagagaa ggccaaacgc gcaaaggaag acaaggtata tatatatcca ttgataatgt 3060  
 gatcatatgt tcatacacga tttactttca aactaatata ggtttttcga tcattgttca 3120  
 tgtttttatc aaaatttgca cctggtgggt gtcttctcag tttatttggg taagtaatgt 3180  
 attataaatt ggacgaagct gtgatgggta aatctaaatt atataatcaa atttggttat 3240

09980364 040802



tttttgtgta tacattcatt atataatcaa aatagcgata cgatctacat tcaattggtg 3300  
 tctatatcat gcaggagggt atgacaaaga agaaaaagca gctaggggtt atgatttagc 3360  
 cgcactcaag tattggggaa ccaccactac tactaacttc cccgtaagtc aatcaatgtt 3420  
 gtacaagatt tcataactta gaaccaattt tttctttttt ttataagatg ctattatctt 3480  
 attattaatt gccatgttta tatcggtaca tttattacaa taaaaagtac ttttggtttg 3540  
 atataatatg tagatgagcg aatatgaaaa agaggtagaa gagatgaagc acatgacaag 3600  
 gcaagagtat gttgcctcac tgcgcaggta tataatggaa cttctgatat tattgcatat 3660  
 ggcatctatt attatacatg tatattagta ttttatatat agaaccatc acgctcacgt 3720  
 ttatatthaa aaatatgtcc gtattcacgt cagattatca gcatacacct atatataata 3780  
 gacattaaaa tatgcaggaa aagtagtggt ttctctctgt gtgcatcgat ttatcgtgga 3840  
 gtaacaaggt attcatacag agagaacgaa tcctattttg ttacgtacat atatatataa 3900  
 aaatataatt ataagatatt acatttttata ttatgaatat ttcttctaata ggggtccaaaa 3960  
 gacatcacca acatggaaga tggcaagcta ggataggaag agtcgccggt aacaaagacc 4020  
 tctacttggg aacttttgggt acgttttagtc ttctcttact aaacttcaca atcaaattcta 4080  
 taacaaaaga tatcaactaa aaactacaac atatatctaa gtaagctgta catatattat 4140  
 atatgaaggc acacaagaag aagctgcaga ggcatacgac attgcggcca tcaaattcag 4200  
 aggattaacc gcagtgaact acttcgacat gaacagatac aacgttaaag caatcctcga 4260  
 aagccctagt ctctctattg gttagcgccgc aaaacgtctc aaggaggcta accgtccggt 4320  
 tocaagtatg atgatgatca gtaataacgt ttcagagagt gagaatagtg ctacggttg 4380  
 gcaaaaacgct gcggttcagc atcatcaggg agtagatttg agcttattgc accaacatca 4440  
 agagaggtag aatgggtatt attacaatgg aggaaacttg tcttcggaga gtgctagggc 4500  
 ttgtttcaaa caagaggatg atcaaacacca tttcttgagc aacacgcaga gcctcatgac 4560  
 taatatcgat catcaaagtt ctgtttcgga tgattcggtt actgtttgtg gaaatgttgt 4620  
 tggttatggt gggttatcaag gatttgcagc cccggttaac tgcgatgcct acgctgctag 4680  
 tgagtttgat tataacgcaa gaaaccatta ttactttgct cagcagcagc agaccagca 4740  
 gtcgccaggt ggagattttc ccgcggaat gacgaataat gttgggtcta atatgtatta 4800  
 ccatggggaa ggtggtggag aagttgctcc aacatttaca gtttggaacg acaattagaa 4860  
 aaaatagtta aag 4873

<210> 6  
 <211> 5151  
 <212> DNA  
 <213> Arabidopsis thaliana

<220>  
 <221> intron  
 <222> (2249) .. (2578)

<220>  
 <221> intron  
 <222> (2994) .. (3220)

<220>  
 <221> intron  
 <222> (3304) .. (3420)

<220>  
 <221> intron  
 <222> (3429) .. (3521)

<220>  
 <221> intron  
 <222> (3611) .. (3770)

09980364-040802

<220>  
 <221> intron  
 <222> (3845)..(3969)

<220>  
 <221> intron  
 <222> (4020)..(4151)

<220>  
 <221> intron  
 <222> (4229)..(4310)

<220>  
 <221> misc\_feature  
 <222> (2026)..(2028)  
 <223> start codon

<220>  
 <221> misc\_feature  
 <222> (5033)..(5035)  
 <223> stop codon

<400> 6  
 tctcaaaactc atccatctga ttttaataaac agttttttct tctttttctt ttgttggttt 60  
 ttaccacttt tctttctttt tctcattttc tacttacttc cagatttttc attttcctat 120  
 ttttggtcac acgtcttgt cagttgtaga tatcttcac tacaggtgtt tccttttatt 180  
 ttcagatgga atctcaatct acaggtgttt ctcaactcaa taaattacgg cccccaaaaa 240  
 atttagtttt tgtatttaca agaaacatag cataatatga tacatatggt tttagaagtac 300  
 tgttttttac acaaaacttt gattataaaa cctcagccgt tctttcgtat ttagaattta 360  
 aacgcattgca atgaagtcac tcgtgaatga tatataaata gtttggttat ttgttatata 420  
 tcgtcccgcc ccgatcaaaa acctaaagta agtgaataaa attttctttt gtagagataa 480  
 gaaaatttgt accgcgtatc gaaaatgtaa aacctatttt aatttctaga tctactaatt 540  
 gggtttgagg tattgaaata attgggtacc aaagggttgg ggtactatat ataaaaagca 600  
 gataagaaca aattgtagg aaaaaataat atgattttgt aggtaccgag gcaattctag 660  
 aacgtgtgtt ggtggtgtgt tagatattgc aggcataata atggaagaag tgaaattata 720  
 ttacaattaa ataggaagac gagaatccat tgaatcatat cttaccagtc caaacttttt 780  
 ttaagtatat aaatctttga aagagtataa acccatgcac atgcccactt tcgtctcatt 840  
 gatccatgtg tataccctat agtttctctc ctaattactc taattcccct aaatcatttt 900  
 ttaatttgat acaattagtc ggataagctc aaactacttt actattggtg cttagcatgt 960  
 acagtacata tctagcatcc gaaccctact agccatccac atcttatgta cataattatg 1020  
 actgttttaa gtactttttt actttcgttt acaatgtttg tttgaaaatt tgaggcgttt 1080  
 tttactggtt gaactgtagc cactaagaca ctaagacttc aaaattcaaa taggaaaatc 1140  
 tatactttta caatatcttt gcatgtcaaa ttatttttaa cgtggttata cattttgcct 1200  
 aagatttaga gtacattcat aataacaaca ataaaatatt tctatatata gtaggtttag 1260  
 tgaagttact atatgagata gttcatcgca ttgatcacgt ctgatgcgaa tcacatatcc 1320  
 tatatctagt tgaacatatg tttcgtggaa gacaggaacc atctcttaga cccgcacttc 1380  
 aaaatatcac aaacacgaa accatgaatc ttttgagttt gttaaaaaat actaaaagt 1440  
 acgagttcgc gtttggaaaa aatgccaaac taaatcgctg gctcgtgtca tacgttcaca 1500  
 catacacatg tctctaagag acacagcatc attggtctta aatcgacaac gagtgagttt 1560  
 ttggactttt acctattggt cctcgacatg tttaccatt tttgtcattt acatttaaca 1620  
 ttttatacgc atgaagagag agagacagaa agcagagatt tgaaatgggt ttgactgat 1680  
 taattaaagt gtcacaaaa caaattggga ttacgagatt atccagttga aacgacatta 1740  
 ctaccctac ctttcaaacc gaccaatata tctccacatt tttcaagtaa atattttttc 1800  
 tttctgaatt taattgcaaa attctctaaa tgcgcataat atgtcgctc ggaagaaatg 1860  
 aacattatat ttttgacttt tcttcttctt cttcctcttc tctcttcatt taacacaaaa 1920

0980364.040802

acctttttct	ttctcctctt	catgcatgaa	ccctaactaa	gttctttttc	ctattcttct	1980
tctctcatct	atcacaagga	gtagttagaa	tattatatga	actcgatgaa	taactgggta	2040
ggcttctctc	tctcctctca	tgatcaaaat	catcaccgta	cggatggtga	ctcctccacc	2100
accagaaccg	ccgtagatgt	tgccggaggg	tactgttttg	atctggccgc	tccctccgat	2160
gaatcttctg	ccgttcaaac	atcttttctt	tctcctttcg	gtgtcaccct	cgaagctttc	2220
accagagaca	ataatagtca	ctcccgaggt	ttgtgtttta	aaaatattta	ttttatcttt	2280
gtttttgtta	ttttttcccc	ttcttccaat	gcatagaaca	aagaccaaga	ctcacgcacg	2340
tagccctatt	tttggttttc	attgtttatc	gatttcatct	cttttgagaa	tttccatgag	2400
tggggtttag	tgtttgttca	catgatcaca	tctcatgaat	ttaaacttag	taaaacatga	2460
aactagacat	ttattttgta	cccttttatc	cttataaaat	gaaaattcca	tttcgtatat	2520
tatagatcgg	tgatgaatca	aaccacaact	tggggatcgc	tttggttttt	gtctatagat	2580
tgggacatca	atggtggtgc	atgcaataca	ttaaccaata	acgaacaaaa	tggaccaaaag	2640
cttgagaatt	tcctcggcgc	caccaccacg	atttacaata	ccaacgagac	cgttgtagat	2700
ggaaatggcg	attgtggagg	aggagacggg	ggtggtggcg	gctcactagg	cctttcgatg	2760
ataaaaacat	ggctgagtaa	tcattcgggt	gctaattgcta	atcatcaaga	caatggtaac	2820
ggtgcacgag	gcttgteect	ctctatgaat	tcactacta	gtgatagcaa	caactacaac	2880
aacaatgatg	atgtcgtcca	agagaagact	attggtgatg	tcgtagaaac	tacaccgaag	2940
aaaactattg	agagtttttg	acaaaggacg	tctatatacc	gcggtgttac	aagggttaatt	3000
tcattgatct	atgtatatatt	ttattgtgct	taaattgtga	ttttcttggt	attgtttggg	3060
acattctaatt	ggttcgggtg	agagagagtg	caacggaatg	tctctcaatg	tatattaaag	3120
agaaacatta	attagtgtac	atgggtttat	atatacaata	atacgtcata	tatattggtat	3180
gctcttgatc	atagtatata	atggttgaaat	ttaatgtcag	gcatcgggtg	acaggtagat	3240
acgaggcaca	tttatgggac	aatagttgca	aaagagaagg	ccagactcgc	aaagggaagac	3300
aagggtactat	atatataaaag	ctaatttttt	aatttttcatt	taccattttat	tttcaaaacta	3360
atthaggttt	tcttttcatg	tgtttcatca	aaatttgcac	ctgatggctc	tcttttcagt	3420
ttatctgggt	aagttcttga	ttttaagcta	taaattaata	atagatgact	attaaatcta	3480
ttctaagcaa	aatataattg	ttgtgttatc	tgatcctaca	ggaggttatg	acaagaaga	3540
aaaagcagct	agggcttacg	atthagccgc	actaaagtat	tggggaccca	ccactactac	3600
taacttcccc	gtatgttaat	taatcaataa	tatatacata	aattcctaac	ttctaaccaa	3660
tttttagtctg	aataatgcca	atctcttaaa	ctagtattat	cttactatta	actgtcatgt	3720
ttatattggt	acaataaaaa	ttagtaatgt	tggttggata	taatattcag	ttgagtgaat	3780
atgagaaaaga	ggtagaagag	atgaagcaca	tgacgaggca	agagtatggt	gcctctctgc	3840
gcaggtagacg	aatgaaactc	ttgaatttat	tgcatttttag	aaacccatca	cgtatatatt	3900
tattaaaata	tatcgtaaca	ttgaataaat	cattatttgg	aaagatataa	gaaacatgta	3960
aatatgcagg	aaaagtagtg	gtttctctcg	tgggtgcatcg	atztatcgag	gagtaacaag	4020
gtacgtataa	tccatctaga	tatggaacga	atactagtgt	ttcattattt	tttttgatgt	4080
atacataata	attgtcatac	aatactatta	atctaatacta	attaatattt	ccttttaaaat	4140
ggttccaaaa	ggcatcacca	acatggaagg	tggcaagcta	ggatcggaag	agtcgccggt	4200
aacaaagacc	tctacttggg	aactttcggg	acattttcca	ataaaatcta	tatactataa	4260
gatattaaat	atacacaaat	atatctaagt	gaatcataca	aattatgtag	gcacacagga	4320
agaggctgct	gaggcttatg	acattgcagc	cattaaattc	agaggattaa	gcgcagtgac	4380
taacttcgac	atgaacagat	acaatgttaa	agcaatcctc	gagagcccga	gtctacctat	4440
tggtagttct	gcgaaacgtc	tcaaggacgt	taacaatccg	gttccagcta	tgatgattag	4500
taataacggt	tcagagagtg	caaataatgt	tagcgggttg	caaaacactg	cgttttcagca	4560
tcatacaggga	atggatttga	gcttatttga	gcaacagcag	gagaggtacg	ttgggttatta	4620
caatggagga	aacttgtcta	ccgagagtac	taggggttgg	ttcaaacaag	aggaggaaca	4680
acaacacttc	ttgagaaact	cgcgagtcca	catgactaat	gttgatcatc	atagctcgac	4740
ctctgatgat	tctgttaccg	tttggtgaaa	tggtgttagt	tatgggtggt	atcaaggatt	4800
cgcaatccct	gttggaacat	cgggttaatta	cgatcccttt	actgctgctg	agattgctta	4860
caacgcaaga	aatcattatt	actatgctca	gcatcagcaa	caacagcaga	ttcagcagtc	4920
gccgggagga	gattttccgg	tggcgatttc	gaataaccat	agctctaaca	tgtactttca	4980
cggggaaagt	ggtggagaag	gggctccaac	gttttcagtt	tggaaacgaca	cttagaaaaa	5040
taagtaaaaag	atcttttagt	tgtttgcttt	gtatgttgcg	aacagtttga	ttctgttttt	5100
ctttttcctt	tttttgggta	attttcttat	aacttttttc	atagtttcga	t	5151

12/15

<210> 7  
 <211> 581  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 7

Met	Asn	Asn	Trp	Leu	Gly	Phe	Ser	Leu	Ser	Pro	His	Asp	Gln	Asn	His
1				5					10					15	
His	Arg	Thr	Asp	Val	Asp	Ser	Ser	Thr	Thr	Arg	Thr	Ala	Val	Asp	Val
			20					25					30		
Ala	Gly	Gly	Tyr	Cys	Phe	Asp	Leu	Ala	Ala	Pro	Ser	Asp	Glu	Ser	Ser
		35					40					45			
Ala	Val	Gln	Thr	Ser	Phe	Leu	Ser	Pro	Phe	Gly	Val	Thr	Leu	Glu	Ala
	50					55					60				
Phe	Thr	Arg	Asp	Asn	Asn	Ser	His	Ser	Arg	Asp	Trp	Asp	Ile	Asn	Gly
65					70					75				80	
Gly	Ala	Cys	Asn	Thr	Leu	Thr	Asn	Asn	Glu	Gln	Asn	Gly	Pro	Lys	Leu
				85					90					95	
Glu	Asn	Phe	Leu	Gly	Arg	Thr	Thr	Thr	Ile	Tyr	Asn	Thr	Asn	Glu	Thr
			100					105					110		
Val	Val	Asp	Gly	Asn	Gly	Asp	Cys	Gly	Gly	Gly	Asp	Gly	Gly	Gly	Gly
		115					120					125			
Gly	Ser	Leu	Gly	Leu	Ser	Met	Ile	Lys	Thr	Trp	Leu	Ser	Asn	His	Ser
	130					135					140				
Val	Ala	Asn	Ala	Asn	His	Gln	Asp	Asn	Gly	Asn	Gly	Ala	Arg	Gly	Leu
145					150					155					160
Ser	Leu	Ser	Met	Asn	Ser	Ser	Thr	Ser	Asp	Ser	Asn	Asn	Tyr	Asn	Asn
			165						170					175	
Asn	Asp	Asp	Val	Val	Gln	Glu	Lys	Thr	Ile	Val	Asp	Val	Val	Glu	Thr
			180					185					190		
Thr	Pro	Lys	Lys	Thr	Ile	Glu	Ser	Phe	Gly	Gln	Arg	Thr	Ser	Ile	Tyr
		195					200					205			
Arg	Gly	Val	Thr	Arg	His	Arg	Trp	Thr	Gly	Arg	Tyr	Glu	Ala	His	Leu
	210					215					220				
Trp	Asp	Asn	Ser	Cys	Lys	Arg	Glu	Gly	Gln	Thr	Arg	Lys	Gly	Arg	Gln
225					230					235					240
Val	Tyr	Leu	Gly	Gly	Tyr	Asp	Lys	Glu	Glu	Lys	Ala	Ala	Arg	Ala	Tyr
			245					250					255		
Asp	Leu	Ala	Ala	Leu	Lys	Tyr	Trp	Gly	Pro	Thr	Thr	Thr	Thr	Asn	Phe

09080364 040802

260	265	270
Pro Leu Ser Glu Tyr Glu Lys Glu Val Glu Glu Met Lys His Met Thr 275	280	285
Arg Gln Glu Tyr Val Ala Ser Leu Arg Arg Lys Ser Ser Gly Phe Ser 290	295	300
Arg Gly Ala Ser Ile Tyr Arg Gly Val Thr Arg His His Gln His Gly 305	310	315
Arg Trp Gln Ala Arg Ile Gly Arg Val Ala Gly Asn Lys Asp Leu Tyr 325	330	335
Leu Gly Thr Phe Gly Thr Gln Glu Glu Ala Ala Glu Ala Tyr Asp Ile 340	345	350
Ala Ala Ile Lys Phe Arg Gly Leu Ser Ala Val Thr Asn Phe Asp Met 355	360	365
Asn Arg Tyr Asn Val Lys Ala Ile Leu Glu Ser Pro Ser Leu Pro Ile 370	375	380
Gly Ser Ser Ala Lys Arg Leu Lys Asp Val Asn Asn Pro Val Pro Ala 385	390	395
Met Met Ile Ser Asn Asn Val Ser Glu Ser Ala Asn Asn Val Ser Gly 405	410	415
Trp Gln Asn Thr Ala Phe Gln His His Gln Gly Met Asp Leu Ser Leu 420	425	430
Leu Gln Gln Gln Gln Glu Arg Tyr Val Gly Tyr Tyr Asn Gly Gly Asn 435	440	445
Leu Ser Thr Glu Ser Thr Arg Val Cys Phe Lys Gln Glu Glu Glu Gln 450	455	460
Gln His Phe Leu Arg Asn Ser Pro Ser His Met Thr Asn Val Asp His 465	470	475
His Ser Ser Thr Ser Asp Asp Ser Val Thr Val Cys Gly Asn Val Val 485	490	495
Ser Tyr Gly Gly Tyr Gln Gly Phe Ala Ile Pro Val Gly Thr Ser Val 500	505	510
Asn Tyr Asp Pro Phe Thr Ala Ala Glu Ile Ala Tyr Asn Ala Arg Asn 515	520	525
His Tyr Tyr Tyr Ala Gln His Gln Gln Gln Gln Gln Ile Gln Gln Ser 530	535	540
Pro Gly Gly Asp Phe Pro Val Ala Ile Ser Asn Asn His Ser Ser Asn 545	550	555
		560

00980364-040802

```
<400> 11
aacgcataata actaaagatc 20
```

<210> 12  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 12  
ccatggatcc agagacgaag cgaaac

26

<210> 13  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 13  
actccatgga taataactgg ttaggc

26

<210> 14  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 14  
aaattctcaa gctttggtcc atcttg

26

09980364.040802

1 / 13

## SEQUENCE LISTING

<110> Plant Research International  
Her Majesty the Queen in Right of Canada as Represented by the  
Minister of Agriculture and Agri-Food Canada

<120> Use of the BNM3 Transcriptional Activator to Control  
Plant Embryogenesis and Regeneration Processes

<130> 08-887547WO

<140>

<141>

<150> EP 99201745.9-2106

<151> 1999-06-02

<160> 14

<170> PatentIn Ver. 2.1

<210> 1

<211> 2014

<212> DNA

<213> Brassica napus

<400> 1

```
gttcattctt cttctttaag accaaaacct ttttctcttc ctcttcatgc atgaacccta 60
actaagtctt tcttctttta ctttttacc aagaactcgtt agatcactct ctgaactcaa 120
tgaataataa ctgggttaggc ttttctcttc ctctttagga acaaaatcac catcgtaagg 180
acgtctactc ttccaccacc acaaccgtcg tagatgtcgc cggagagtag tgttacgac 240
cgaccgctgc ctccgatgag tcttcagcca tccaaacatc gtttctcttc ccctttgggtg 300
tctgtcgtcg tgcttttcacc agagacaaca atagtcactc cggagattgg gacatcaatg 360
gttgtgcatg caataacatc cacaacgatg agcaagatgg accaaagctt gagaatttcc 420
ttggccgcac caccacgatt tacaacacca acgaaaacgt tggagatgga agtggaagtg 480
gctgttatgg aggaggagac ggtggtggtg gctcactagg actttcgatg ataaagacat 540
ggctgagaaa tcaaccctgt gataatgttg ataataaaga aaatggcaat gctgcaaaag 600
gcctgtccct ctcaatgaac tcatctactt cttgtgataa caacaacgac agcaataaca 660
acgttgttgc ccaaggggaag actattgatg atagcgttga agctacaccg aagaaaacta 720
ttgagagttt tggacagagg acgtctatat accgcggtgt tacaaggcat cgggtggacag 780
gaagatatga ggcacattta tgggataata gttgtaaaag agaaggccaa acgcgcaaaag 840
gaagacaagt ttatttggga ggttatgaca aagaagaaaa agcagctagg gcttatgatt 900
tagccgcact caagtattgg ggaaccacca ctactactaa cttccccatg agcgaatatg 960
aaaaagaggt agaagagatg aagcacatga caaggcaaga gtatgttgcc tctactgcgca 1020
ggaaaagttag tgggttctct cgtggtgcat cgatttatcg tggagtaaca agacatcacc 1080
aacatgggaag atggcaagct aggataggaa gagtcgcccgg taataaagac ctctacttgg 1140
gaacttttgg cacacaagaa gaagctgcag aggcatacga cattgcggcc atcaaattca 1200
gaggattaac cgcagtgact aacttcgaca tgaacagata caacgttaaa gcaatcctcg 1260
aaagccctag tcttctctatt ggtagcgcgg caaaacgtct caaggaggct aaccgtccgg 1320
ttccaagtat gatgatgac agtaataacg tttcagagag tgagaatagt gctagcgggt 1380
ggcaaaacgc tgcggttcag catcatcagg gagtagattt gagcttattg caccaacatc 1440
aagagaggtt caatggttat tattacaatg gaggaaactt gtcttcggag agtgctaggg 1500
cttgtttcaa acaagaggat gatcaacacc atttcttgag caacacgcag agcctcatga 1560
ctaataatcg tcatcaaagt tctgtttcgg atgattcggg tactgtttgt ggaaatgttg 1620
ttggttatgg tggttatcaa ggatttgacg ccccggttaa ctgcgatgcc tacgtgcta 1680
gtgagtttga ttataacgca agaaaccatt attactttgc tcagcagcag cagacccagc 1740
agtcgccagg tggagatttt cccgcggcaa tgacgaataa tgttggtctt aatatgtatt 1800
accatgggga aggtggtgga gaagtgtctc caacatttac agtttggaac gacaattaga 1860
aaaaatagtt aaagatcttt agttatatgc gttgttgtgt gctggtgaac agtgtgatac 1920
tttgattatg tttttttctt tctctttttc ttttctcttg ttaatttctt aagacttatt 1980
tttagtttcc attagttgga taaattttca gact 2014
```

<210> 2

<211> 579

SUBSTITUTE SHEET (RULE 26)

0980364-010802



2/13

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 2

Met Asn Asn Asn Trp Leu Gly Phe Ser Leu Ser Pro Tyr Glu Gln Asn  
 1 5 10 15

His His Arg Lys Asp Val Tyr Ser Ser Thr Thr Thr Thr Val Val Asp  
 20 25 30

Val Ala Gly Glu Tyr Cys Tyr Asp Pro Thr Ala Ala Ser Asp Glu Ser  
 35 40 45

Ser Ala Ile Gln Thr Ser Phe Pro Ser Pro Phe Gly Val Val Val Asp  
 50 55 60

Ala Phe Thr Arg Asp Asn Asn Ser His Ser Arg Asp Trp Asp Ile Asn  
 65 70 75 80

Gly Cys Ala Cys Asn Asn Ile His Asn Asp Glu Gln Asp Gly Pro Lys  
 85 90 95

Leu Glu Asn Phe Leu Gly Arg Thr Thr Thr Ile Tyr Asn Thr Asn Glu  
 100 105 110

Asn Val Gly Asp Gly Ser Gly Ser Gly Cys Tyr Gly Gly Gly Asp Gly  
 115 120 125

Gly Gly Gly Ser Leu Gly Leu Ser Met Ile Lys Thr Trp Leu Arg Asn  
 130 135 140

Gln Pro Val Asp Asn Val Asp Asn Gln Glu Asn Gly Asn Ala Ala Lys  
 145 150 155 160

Gly Leu Ser Leu Ser Met Asn Ser Ser Thr Ser Cys Asp Asn Asn Asn  
 165 170 175

Asp Ser Asn Asn Asn Val Val Ala Gln Gly Lys Thr Ile Asp Asp Ser  
 180 185 190

Val Glu Ala Thr Pro Lys Lys Thr Ile Glu Ser Phe Gly Gln Arg Thr  
 195 200 205

Ser Ile Tyr Arg Gly Val Thr Arg His Arg Trp Thr Gly Arg Tyr Glu  
 210 215 220

Ala His Leu Trp Asp Asn Ser Cys Lys Arg Glu Gly Gln Thr Arg Lys  
 225 230 235 240

Gly Arg Gln Val Tyr Leu Gly Gly Tyr Asp Lys Glu Glu Lys Ala Ala  
 245 250 255

Arg Ala Tyr Asp Leu Ala Ala Leu Lys Tyr Trp Gly Thr Thr Thr Thr  
 260 265 270

Thr Asn Phe Pro Met Ser Glu Tyr Glu Lys Glu Val Glu Glu Met Lys  
 275 280 285

His Met Thr Arg Gln Glu Tyr Val Ala Ser Leu Arg Arg Lys Ser Ser  
 290 295 300

Gly Phe Ser Arg Gly Ala Ser Ile Tyr Arg Gly Val Thr Arg His His  
 305 310 315 320

Gln His Gly Arg Trp Gln Ala Arg Ile Gly Arg Val Ala Gly Asn Lys  
 325 330 335

SUBSTITUTE SHEET (RULE 26)

09080364-040802

3/13

Asp Leu Tyr Leu Gly Thr Phe Gly Thr Gln Glu Glu Ala Ala Glu Ala  
 340 345 350  
 Tyr Asp Ile Ala Ala Ile Lys Phe Arg Gly Leu Thr Ala Val Thr Asn  
 355 360 365  
 Phe Asp Met Asn Arg Tyr Asn Val Lys Ala Ile Leu Glu Ser Pro Ser  
 370 375 380  
 Leu Pro Ile Gly Ser Ala Ala Lys Arg Leu Lys Glu Ala Asn Arg Pro  
 385 390 395 400  
 Val Pro Ser Met Met Met Ile Ser Asn Asn Val Ser Glu Ser Glu Asn  
 405 410 415  
 Ser Ala Ser Gly Trp Gln Asn Ala Ala Val Gln His His Gln Gly Val  
 420 425 430  
 Asp Leu Ser Leu Leu His Gln His Gln Glu Arg Tyr Asn Gly Tyr Tyr  
 435 440 445  
 Tyr Asn Gly Gly Asn Leu Ser Ser Glu Ser Ala Arg Ala Cys Phe Lys  
 450 455 460  
 Gln Glu Asp Asp Gln His His Phe Leu Ser Asn Thr Gln Ser Leu Met  
 465 470 475 480  
 Thr Asn Ile Asp His Gln Ser Ser Val Ser Asp Asp Ser Val Thr Val  
 485 490 495  
 Cys Gly Asn Val Val Gly Tyr Gly Gly Tyr Gln Gly Phe Ala Ala Pro  
 500 505 510  
 Val Asn Cys Asp Ala Tyr Ala Ala Ser Glu Phe Asp Tyr Asn Ala Arg  
 515 520 525  
 Asn His Tyr Tyr Phe Ala Gln Gln Gln Gln Thr Gln Gln Ser Pro Gly  
 530 535 540  
 Gly Asp Phe Pro Ala Ala Met Thr Asn Asn Val Gly Ser Asn Met Tyr  
 545 550 555 560  
 Tyr His Gly Glu Gly Gly Gly Glu Val Ala Pro Thr Phe Thr Val Trp  
 565 570 575  
 Asn Asp Asn

<210> 3  
 <211> 2011  
 <212> DNA  
 <213> Brassica napus

<400> 3  
 ttcttctttt acctttttacc aagaactcgt tagatcattt tctgaactcg atgaataata 60  
 actgggttagg cttttctctc tctccttatg aacaaaatca ccatacgtaag gacgtctgct 120  
 cttccaccac cacaaccgcc gtagatgtcg ccggagagta ctgttacgat ccgaccgctg 180  
 cctccgatga gtcttcagcc atccaaacat cgtttcttcc tccctttggt gtcgtcctcg 240  
 atgctttcac cagagacaac aatagtcact cccgagattg ggacatcaat ggtagtgcac 300  
 gtaataacat ccacaatgat gagcaagatg gacaaaaact tgagaatttc cttggccgca 360  
 ccaccacgat ttacaacacc aacgaaaacg ttggagatat cgatggaagt ggggtgttatg 420  
 gaggaggaga cgggtggtgtt gggtcactag gactttcgat gataaagaca tggctgagaa 480  
 atcaaccggt ggataatgtt gataatcaag aaaatggcaa tgggtgcaaaa ggcctgtccc 540  
 tctcaatgaa ctcatctact tcttgtgata acaacaacta cagcagtaac aaccttggtg 600  
 cccaagggaa gactattgat gatagcgttg aagctacacc gaagaaaact attgagagtt 660

SUBSTITUTE SHEET (RULE 26)

09980364.040802

4/13

ttggacagag gacgtctata taccgcggtg ttacaaggca tcggtggaca ggaagatatg 720  
 aggcacattt atgggataat agttgtaaac gagaaggcca aacgcgcaaa ggaagacaag 780  
 tttatttggg aggttatgac aaagaagaaa aagcagctag ggcttatgat ttagccgcac 840  
 tcaagtattg gggaaccacc actactacta acttcccccatt gagcgaatat gagaaagaga 900  
 tagaagagat gaagcacatg acaaggcaag agtatgttg ctcacttcgc aggaaaagta 960  
 gtggtttctc tcgtggtgca tcgattttatc gtggagtaac aagacatcac caacatggaa 1020  
 gatggcaagc taggatagga agagtcgccc gtaacaaaga cctctacttg ggaacttttg 1080  
 gcacacaaga agaagctgca gaggcatac acattgctggc catcaaattc agaggattaa 1140  
 ccgcagtgc taacttcgac atgaacagat acaacgttaa agcaatcctc gaaagcccta 1200  
 gtcttcctat tggtagcgcc gcaaacgctc tcaaggaggc taaccgtccg gttccaagta 1260  
 tgatgatgat cagtaataac gtttcagaga gtgagaataa tgctagcggg tggcaaacg 1320  
 ctgcggttca gcatcatcag ggagtagatt tgagcttatt gcagcaacat caagagaggt 1380  
 acaatggtta ttattacaat ggaggaaaact tgtcttcgga gagtgttagg gcttggttca 1440  
 aacaagagga tgatcaaac catttcttgca gcaacacgca gagcctcatg actaatatcg 1500  
 atcatcaaag ttctgtttca gatgattcgg ttactgtttg tggaaatgtt gttggttatg 1560  
 gtggttatca aggatttgca gccccgggta actgcgatgc ctacgctgct agtgagtttg 1620  
 actataacgc aagaaaccat tattactttg ctcagcagca gcagaccag cattcgccag 1680  
 gaggagattt tcccgcggca atgacgaata atgttggctc taatatgtat taccatgggg 1740  
 aaggtggttg agaagttgct ccaacattta cagtttgtaa cgacaattag aaataatagt 1800  
 taaagatctt tagttatatg cgttggttggt tgggtgtgaa cagtttgata ctttgattat 1860  
 gttttttttt ctctttttca ttttggttgg tagttttctta agacttattt tttgtttcca 1920  
 ttagttggat aaattttcgg acttaagggt cacttctgtt ctgacttctg tctaatacag 1980  
 aaaagttttc ataaaaaaaa aaaaaaaaaa a 2011

<210> 4  
 <211> 579  
 <212> PRT  
 <213> Brassica napus

<400> 4  
 Met Asn Asn Asn Trp Leu Gly Phe Ser Leu Ser Pro Tyr Glu Gln Asn  
 1 5 10 15  
 His His Arg Lys Asp Val Tyr Ser Ser Thr Thr Thr Thr Val Val Asp  
 20 25 30  
 Val Ala Gly Glu Tyr Cys Tyr Asp Pro Thr Ala Ala Ser Asp Glu Ser  
 35 40 45  
 Ser Ala Ile Gln Thr Ser Phe Pro Ser Pro Phe Gly Val Val Val Asp  
 50 55 60  
 Ala Phe Thr Arg Asp Asn Asn Ser His Ser Arg Asp Trp Asp Ile Asn  
 65 70 75 80  
 Gly Cys Ala Cys Asn Asn Ile His Asn Asp Glu Gln Asp Gly Pro Lys  
 85 90 95  
 Leu Glu Asn Phe Leu Gly Arg Thr Thr Thr Ile Tyr Asn Thr Asn Glu  
 100 105 110  
 Asn Val Gly Asp Gly Ser Gly Ser Gly Cys Tyr Gly Gly Gly Asp Gly  
 115 120 125  
 Gly Gly Gly Ser Leu Gly Leu Ser Met Ile Lys Thr Trp Leu Arg Asn  
 130 135 140  
 Gln Pro Val Asp Asn Val Asp Asn Gln Glu Asn Gly Asn Ala Ala Lys  
 145 150 155 160  
 Gly Leu Ser Leu Ser Met Asn Ser Ser Thr Ser Cys Asp Asn Asn Asn  
 165 170 175  
 Asp Ser Asn Asn Asn Val Val Ala Gln Gly Lys Thr Ile Asp Asp Ser  
 180 185 190

SUBSTITUTE SHEET (RULE 26)

0980364-040802

5/13

Val Glu Ala Thr Pro Lys Lys Thr Ile Glu Ser Phe Gly Gln Arg Thr  
 195 200 205  
 Ser Ile Tyr Arg Gly Val Thr Arg His Arg Trp Thr Gly Arg Tyr Glu  
 210 215 220  
 Ala His Leu Trp Asp Asn Ser Cys Lys Arg Glu Gly Gln Thr Arg Lys  
 225 230 235 240  
 Gly Arg Gln Val Tyr Leu Gly Gly Tyr Asp Lys Glu Glu Lys Ala Ala  
 245 250 255  
 Arg Ala Tyr Asp Leu Ala Ala Leu Lys Tyr Trp Gly Thr Thr Thr Thr  
 260 265 270  
 Thr Asn Phe Pro Met Ser Glu Tyr Glu Lys Glu Val Glu Glu Met Lys  
 275 280 285  
 His Met Thr Arg Gln Glu Tyr Val Ala Ser Leu Arg Arg Lys Ser Ser  
 290 295 300  
 Gly Phe Ser Arg Gly Ala Ser Ile Tyr Arg Gly Val Thr Arg His His  
 305 310 315 320  
 Gln His Gly Arg Trp Gln Ala Arg Ile Gly Arg Val Ala Gly Asn Lys  
 325 330 335  
 Asp Leu Tyr Leu Gly Thr Phe Gly Thr Gln Glu Glu Ala Ala Glu Ala  
 340 345 350  
 Tyr Asp Ile Ala Ala Ile Lys Phe Arg Gly Leu Thr Ala Val Thr Asn  
 355 360 365  
 Phe Asp Met Asn Arg Tyr Asn Val Lys Ala Ile Leu Glu Ser Pro Ser  
 370 375 380  
 Leu Pro Ile Gly Ser Ala Ala Lys Arg Leu Lys Glu Ala Asn Arg Pro  
 385 390 395 400  
 Val Pro Ser Met Met Met Ile Ser Asn Asn Val Ser Glu Ser Glu Asn  
 405 410 415  
 Ser Ala Ser Gly Trp Gln Asn Ala Ala Val Gln His His Gln Gly Val  
 420 425 430  
 Asp Leu Ser Leu Leu His Gln His Gln Glu Arg Tyr Asn Gly Tyr Tyr  
 435 440 445  
 Tyr Asn Gly Gly Asn Leu Ser Ser Glu Ser Ala Arg Ala Cys Phe Lys  
 450 455 460  
 Gln Glu Asp Asp Gln His His Phe Leu Ser Asn Thr Gln Ser Leu Met  
 465 470 475 480  
 Thr Asn Ile Asp His Gln Ser Ser Val Ser Asp Asp Ser Val Thr Val  
 485 490 495  
 Cys Gly Asn Val Val Gly Tyr Gly Gly Tyr Gln Gly Phe Ala Ala Pro  
 500 505 510  
 Val Asn Cys Asp Ala Tyr Ala Ala Ser Glu Phe Asp Tyr Asn Ala Arg  
 515 520 525  
 Asn His Tyr Tyr Phe Ala Gln Gln Gln Gln Thr Gln Gln Ser Pro Gly  
 530 535 540

0980364.040802

SUBSTITUTE SHEET (RULE 26)

6/13

Gly Asp Phe Pro Ala Ala Met Thr Asn Asn Val Gly Ser Asn Met Tyr  
545 550 555 560

Tyr His Gly Glu Gly Gly Gly Glu Val Ala Pro Thr Phe Thr Val Trp  
565 570 575

Asn Asp Asn

<210> 5  
<211> 4873  
<212> DNA  
<213> Brassica napus

<220>  
<221> intron  
<222> (1846)..(2298)

<220>  
<221> intron  
<222> (2720)..(2952)

<220>  
<221> intron  
<222> (3036)..(3160)

<220>  
<221> intron  
<222> (3170)..(3314)

<220>  
<221> intron  
<222> (3404)..(3553)

<220>  
<221> intron  
<222> (3628)..(3797)

<220>  
<221> intron  
<222> (3849)..(3961)

<220>  
<221> intron  
<222> (4039)..(4148)

<220>  
<221> misc\_feature  
<222> (1620)..(1622)  
<223> start codon

<220>  
<221> misc\_feature  
<222> (4856)..(4858)  
<223> stop codon

<400> 5  
atctctccac cgattcgtta cccagtgctt gaaaatatga tgactacgaa tcaattaaat 60  
ggagaagctc cactgcttgt gtaggtggaa gctcaagcaa caaccggaaa cctcggcggt 120  
atcgggaggt agcatcgta tttgccaaaa tttccgccgc agagatgaaa cgattcaaga 180  
gaaacctca aatagggttag ccataaaaca gtgaattagt atgatttaag agataagaag 240  
agaagatgag ttcaagaaaa gaaataactca catctattta tactgtttac acaccgcctt 300  
tcagatctaa gcaaagcatt gaagatgaat cgtggaggag agttaatagg atttaacaca 360  
aagccattaa ccaaaccgtt gcaggtcggg agacgaaccg caaaagtcac gcctagccgt 420  
cgcacgaaga ggagcgtatga atttcgtttt ctgcgtgcag tcgtattagg gatagacgga 480

SUBSTITUTE SHEET (RULE 26)

208070-49E08660

gctcattatc gttggggccgg aaacactttct aatctcacag cccatgaaca cactaaagaa 540  
 cgaaaccgaa aatgttttgaa gtttaaatgaa acgtgcggtt tgccttatgg acacatgtca 600  
 ttacgatatg aaatgatttta tctacgtgga tcataggtgt ctctctaagg agagagcaaa 660  
 cctatacttt atataaatag atttgtatca ttctaagagg tgtttaagat ttttgcataa 720  
 atattaaaaa aaaatacaaaa tttttatgta attagttttg gttacataaa ataacattaa 780  
 ataaaaattaa ttcaaccaat aaaaaaatac ggtatttttat aattgggtcaa aaataaaaaat 840  
 aaaacattaa atttcaccta gaattacgag aatgtcactt attttgaaac aaaatcaaaa 900  
 tctttaaaca tcaattaaac tgatacggat ggagtatata tctttacaga gaacatatat 960  
 atatgttttt cttgtaagcg tccatctctt cttagtcatt tagttcaaat accagctgca 1020  
 gtaaaaccat gaattatttga atttgtttgta aaatatctga agcgactact gcacgtttgg 1080  
 aagcaaaacg ccaaacgcaa tcgctcgctc ggtcataggg tcacacatac acatgtgact 1140  
 agcattatgg gtcttaattc aacagcgagt gattttggga tttattatta gttctcgtgt 1200  
 tactctcact ttaacacaaa gtcactaac ttatttacac atgaagagag gtttgaagg 1260  
 gcttttgact gattaattat aatgtattaa accaaactag aattaagaga ttaggcattg 1320  
 aattacatta ccaccaccac ccaccattca aaccgaccaa tacatctcca cagttttcaa 1380  
 gtaaaacaac ttttttttgt tgttctctcg gaatttaaatt aaatattcgt ttatataaat 1440  
 gcgcatgata tgacgcctcg gaagaaatct ttttctctc ctcttcatgc atgaacccta 1500  
 gttcatctct cttctttaag accaaaacct ttttctctc ctcttcatgc atgaacccta 1560  
 actaagttct tcttctttta ccttttacca agaactcgtt agatcactct ctgaactcaa 1620  
 tgaataataa ctgggttaggc ttttctctct ctccttatga acaaaatcac catcgtaagg 1680  
 acgtctactc ttcaccacc tccacgctgc cttccgagca tccaaacatc gtttctctct ccctttgggtg 1800  
 cgaccgctgc tcccgatgag agagacaaca atagtcactc ccgaggttat tgttttagaa 1860  
 tcgctcgctga tgccttcacc tgctttatgt tttagtttcc tcttcttcca atgcgtagaa 1920  
 ctacttggtt ttttttgatt tgtttatgtt ccttattttt tcttgggct tatttatcga 1980  
 caaagaccaa tacacacgca cgcatactag ggttttgatg tttgtttgca tatgaaatga 2040  
 tttcatttat tttgagaata acatagattt tttttaaaga tatacatgga tatgaaatga 2100  
 ctaaaacata tgccagttat attcaatate ataatatgat cacatacatg tgtacctttt 2160  
 aatttgacat ttctctcttt acagttgaag gagagaataa ccaaataccc atttgtatat 2220  
 gatttgtata tttgttttct taaattttaa aatatatgat aatataggcc attaatcttt 2280  
 tatagatcgg ttttatagat tgggacatca atggttgtgc atgcaataac atccacaacg 2340  
 gatttttttt tggaccaaag cttgagaatt tcttggccg caccaccacg atttacaaca 2400  
 atgagcaaga cgttggagat ggaagtggaa gtggctgtta tggaggagga gacgggtggg 2460  
 ccaacgaaaa gtggctcact aggaatttct atgataaaga aatgctgcaa aaggcctgtc cctctcaatg aactcatcta 2580  
 ttgataatca agaaaaatggc aatgctgcaa aaggcctgtc cctctcaatg aactcatcta 2580  
 cttcttgtga taacaacaac gacagcaata acaacgttgt tgcccaaggg aagactattg 2640  
 atgatacgtt tgaagctaca ccgaagaaaa ctattgagag ttttggacag aggacgtcta 2700  
 tataccgagg tgttacaagg tgcccttcat tttttaaatt aatgtgtgta aaatgtcgtt 2760  
 tgaattgtta tcttcttggg aaagtctggg acattgatct aatggctctg ttgcgagagt 2820  
 gctaccgaat ggtccttgat atatagtatc aaagagagat attgttatta tgggcttata 2880  
 tagaataata catatatata tatatatata tggtagctgt tgatgacatg tatgttcgta 2940  
 ttaaataata aggcatacgt ggacaggaag attagggca catttatggg ataataatg 3000  
 taaaagagaa ggccaaacgc gcaaaggaag acaaggtata tatatatcca ttgataaatt 3060  
 gatcatattt tcatacacga tttactttca aactaatata ggtttttcga tcattgttca 3120  
 tgtttttatc aaaatttgca cctgggtggt gtcttctcag tttatttggg taagtaattt 3180  
 attataaatt ggacgaagct gtgatgggta aatctaaatt atataatcaa atttgtttat 3240  
 tttttgtgta tacattcatt atataatcaa aatagcgata cgatctacat tcaattgttg 3300  
 tctatatcat gcaggagggt atgacaaaga agaaaaagca gctagggctt atgatttagc 3360  
 cgactcaag cattgggggaa ccaccactac tactaacttc cccgtaagtc aatcaatgtt 3420  
 gtacaagatt tcataactta gaaccaattt tattcttttt ttataagatg ctattatctt 3480  
 attatttaatt gccatgttta tatcgtttaca tttattacaa taaaaagtag ttttggtttg 3540  
 atataatatg tagatgagcg aatatgaaaa agaggtagaa gagatgaagc acatgacaag 3600  
 gcaagagtat gttgcctcac tgcgcaggta tataatggaa cttctgatat tattgcatat 3660  
 ggcattctatt attatacatg tatatttagta ttttatatat agaaccatc acgctcacgt 3720  
 ttatatttaa aaatatgtcc gtattcacgt cagattatca gcatacacct atataataa 3780  
 gacattaaaa tatgcaggaa aagtagtggt ttctctcgtg gtgcacgat ttatcgtgga 3840  
 gtaacaaggt attcatcacag agagaacgaa tcttattttg ttacgtacat atatatataa 3900  
 aaatataatt ataagatatc acattttata ttatgaatat ttcttctaatt gggtccaaaa 3960  
 gacatcacca acatggaga tggcaagcta ggaatggaa agtcgcccgt aacaaagacc 4020  
 tctacttggg aacttttggg acgttttagt ttctcttact aaacttcaca atcaaatcta 4080  
 taacaaaaga tatcaactaa aaactacaac atatatctaa gtaagctgta catatattat 4140  
 atatgaaggg acacaagaag aagctgcaga ggcatacgac attgcccga tcaaattcag 4200  
 aggatttaacc gcagtgacta acttcgacat aacgttaaag caatctcga 4260  
 aagccctagt cttcctattg gttagcgcgc aaaacgtctc aaggaggcta accgtccggg 4320  
 tccaagtatg atgatgatca gtaataacgt ttcagagagt gagaatagtg cttagcgggtg 4380  
 gcaaaacgc ggggttcagc atcatcaggg agtagatttg agcttattgc accaacatca 4440

8/13

```

agagaggtac aatgggttatt attacaatgg agggaaacttg tcttcggaga gtgctagggc 4500
ttgtttcaaa caagaggatg atcaacacca tttcttgagc aacacgcaga gcctcatgac 4560
taatatcgat catcaaagt ctgtttcggg tgattcgggt actgtttgtg gaaatgttgt 4620
tggttatggg gggtatcaag gatttgcagc cccggttaac tgcgatgcct acgctgctag 4680
tgagtttgat tataacgcaa gaaaccatta ttactttgct cagcagcagc agaccagca 4740
gtcgccaggt ggagattttc ccgcggaat gacgaataat gttgggtcta atatgtatta 4800
ccatggggaa ggtggtggag aagttgctcc aacatttaca gtttgggaac acaattagaa 4860
aaaatagtta aag
4873

```

```

<210> 6
<211> 5151
<212> DNA
<213> Arabidopsis thaliana

```

```

<220>
<221> intron
<222> (2249)..(2578)

```

```

<220>
<221> intron
<222> (2994)..(3220)

```

```

<220>
<221> intron
<222> (3304)..(3420)

```

```

<220>
<221> intron
<222> (3429)..(3521)

```

```

<220>
<221> intron
<222> (3611)..(3770)

```

```

<220>
<221> intron
<222> (3845)..(3969)

```

```

<220>
<221> intron
<222> (4020)..(4151)

```

```

<220>
<221> intron
<222> (4229)..(4310)

```

```

<220>
<221> misc_feature
<222> (2026)..(2028)
<223> start codon

```

```

<220>
<221> misc_feature
<222> (5033)..(5035)
<223> stop codon

```

```

<400> 6
tcctaaactc atccatctga ttttaataac agttttttct tctttttctt ttgttgtttt 60
ttaccacttt tctttctttt tctcattttc tacttacttc cagatttttc attttccctat 120
ttttgggtcac acgctcttgt cagttgtaga tatcttcate tacagggtgt tcctttttatt 180
ttcagatgga atctcaatct acagggtgtt ctacttcaa taaattacgg cccccaacaaa 240
atttagtttt tgtattttaca agaaacatag cataatatga tacatatggg tttgaagtac 300
tgttttttac acaaaaacttt gattataaaa cctcagccgt tctttcgtat ttagaattta 360
aacgcgatgca atgaagtcct tcgtgaatga tatataaata gtttggttat ttgttatata 420
tcgtcccgcc ccgatcaaaa acctaaagta agtgaataaaa attttctttt gtagagataa 480

```

SUBSTITUTE SHEET (RULE 26)

208040" 49E0B660

gaaaatttgt accgcgtatc gaaaatgtaa aacctatttt aattttctaga tctactaatt 540  
 ggggtttgagg tattgaaata attgggtacc aaagggtttgg ggtactatat ataaaaagca 600  
 gataagaaca aattgttagg aaaaaataat atgattttgt aggtaccgag gcaattctag 660  
 aacgtgtgtt ggtggtgtgt tagatattgc aggcataata atggaagaag tgaattata 720  
 ttacaattaa ataggaagac gagaatccat tgaatcatat cttaccagtc caaacttttt 780  
 ttaagtatat aaatctttga aagagtataa acccatgcac atgcccactt tcgtctcatt 840  
 gatccatgtg tataccctat agtttccctc ctaattactc taattccctt aaatcatttt 900  
 ttaatttgat acaattagtc ggataagctc aaactacttt actattgggtg cttagcatgt 960  
 acagtacata tctagcatcc gaaccctact agccatccac atcttatgta cataattatg 1020  
 actgttttaa gtactttttt actttcgttt acaatgtttg tttgaaaatt tgaggcggtt 1080  
 tttactgggt gaactgtagc cactaagaca ctaagacttc aaaattcaaa taggaaaatc 1140  
 tatactttta caatattctt gcatgtcaaa ttatttttaa cgtgggtata cattttgcct 1200  
 aagattttaga gtacattcat aataacaaca taaaaatatt tctatatata gtaggtttag 1260  
 tgaagttact atatgagata gttcatcgca ttgatcacgt ctgatgcgaa tcacatatcc 1320  
 tatatctagt tgaacatatg tttcgtggaa gacaggaacc atctcttaga cccgcacttc 1380  
 aaaatatcac aaaacacgaa accatgaatc ttttgagttt gttaaaaaat actaaaagt 1440  
 acgagttcgc gtttggaaaa taatcccaaac taaatcgctg gctcgtgtca tacgttaca 1500  
 catacacatg tctctaagag acacagcatc attgggtctta aatcgacaac gagtgagttt 1560  
 ttggactttt acctattggt cctcgacatg tttaccctt tttgtcattt acatttaaca 1620  
 ttttatacgc atgaagagag agagacagaa agcagagatt tgaaatgggt tttgactgat 1680  
 taattaaagt gtcataaaaa caaattggga ttacagagatt atccagttga aacgacatta 1740  
 ctacccttac ccttcaaaac gaccaataca tctccacatt tttcaagtaa atattttttt 1800  
 tttctgaatt taattgcaaa attctctaaa tgcgcataat atgtcgctc ggaagaaatg 1860  
 aacattatat ttttgacttt tcttcttctt cttcctcttc tctcttcatt taacaccaa 1920  
 acctttttct tctcctctt catgcatgaa ccctaactaa gttctttttt ctattttat 1980  
 tctctcatct atcacaagga gtgattagaa tattatatga actcgatgaa taactgggtta 2040  
 ggcttctctc tctctctca tgatcaaaat catcaccgta cggatgttga ctctccacc 2100  
 accagaaccg ccgtagatgt tgccggaggt tactgttttg atctggccgc tccctccgat 2160  
 gaactctctg ccgttcaaac atctttttct tctcctttcg gtgtcacct cgaagcttt 2220  
 accagagaca ataattagta ctcccgaggt ttgtgtttta aaaatattta ttttctctt 2280  
 gtttttggtta ttttttccc ttcttccaat gcatagaaca aagaccaaga ctacgcacg 2340  
 tagccctatt tttgtttttc attgtttatc gatttcatct cttttgagaa tttccatgag 2400  
 tgggggtttag tgtttgttca catgatcaca tctcatgaat ttaaaacttag taaaacatga 2460  
 aacttagcat ttattttgta cctttttatc tctcataaat gaaaattcca tttcgtatat 2520  
 tatagatcgg tgatgaatca aacccaacgt tggggatcgc ttigtttttt gtctatagat 2580  
 tggggacatca atgggtggtg atgcaataca ttaaccaata acgaacaaaa tggaccaaa 2640  
 cttgagaatt tctcggccg caccaccag atttacaata ccaacgagac cgtttagat 2700  
 ggaaattggc atgttggagg aggagacggt ggttgggtggc gctcactagg ctttctgat 2760  
 ataaaaacat ggctgagtaa tcattcgggt gctaattgcta atcatcaaga caatggtaac 2820  
 ggtgcacgag gcttgtccct ctctatgaat tcatctacta gtgatagcaa caactacaac 2880  
 aacaatgat atgtcgtcca agagaagact attgttgatg tcgtagaaac tacaccgaag 2940  
 aaaaactatt agagttttgg acaaaggacg tctatatacc gcggtgttac aaggttaatt 3000  
 tcattgatct atgtatat ttattgtgct taaattgtga ttttcttggg attgtttggg 3060  
 acattctaatt ggttcgggtg agagagagtg caacggaatg tctctcaatg tatattaaag 3120  
 agaaacatga attagtgtac atgggtttat atatacaata atacgtcata tatattgggt 3180  
 gctcttgatc atagtatata atgtttgaat ttaattgtag gcatcggtgg acagtgatg 3240  
 acgaggcaca tttatgggac aatagttgca aaagagaagg ccagactcgc aaaggaagac 3300  
 aagggtactat atatataaag ctaatttttt aattttcatt taccatttat tttcaacta 3360  
 atttagggtt tcttttcatg tgtttcatca aaatttgcac ctgatggctc tcttttcagt 3420  
 ttatctgggt aagttcttga ttttaagcta taaatttaata atagatgact attaaatcta 3480  
 ttctaagcaa aatataattg ttgtgttatc tgatcctaca ggagggttatg acaaagaaga 3540  
 aaaagcagct agggcttacg atttagccgc actaaagtat tggggaccca ccactactac 3600  
 taacttcccc gtatgttaat taatcaataa tatatacata aattcctaac ttctaacc 3660  
 ttttagtctg aataatgcca atctcttaaa ctagtattat cttactatta actgtcatgt 3720  
 ttatattgtt acaataaaaa ttagtaatgt tgggtggata taatattcag ttgagtgaat 3780  
 atgagaaaga ggtagaagag atgaagcaca tgacgaggca agagtatgtt gcctctctgc 3840  
 gcaggtagac aatgaaactc ttgaatttat tgcattttag aaaccatca cgtatatatt 3900  
 tattaaataa tatcgtaaca ttgaataaat cattatttgg aaagatatataa gaaactatga 3960  
 aatatgcagg aaaagtagtg gtttctctcg tgggtgcatc atttctcgag gagtaacaag 4020  
 gtacgtataa tccatctaga tatggaacga atactagtgt ttcattattt tttttgatgt 4080  
 atacataata atgtgcatac aatactatta atctaacta attaatattt cctttaaaat 4140  
 ggttccaaaa ggcatcacca acatggaagg tggcaagcta ggatcggaag agtcgcgggt 4200  
 aacaaagacc tctacttggg aactttcggg acattttcca ataaaaatc tatactataa 4260  
 gatattaaat atacacaaat atatctaagt gaatcataca aattatgtag gcacacagga 4320  
 agaggctgct gaggtcttat acattgcagc cattaaattc agaggattaa gcgcagtgac 4380  
 caacttcgac atgaacagat acaatgttaa agcaatctc gagagcccga gtctacctat 4440

09980364.040802



10/13

```

tggtagtctt gcgaaacgtc tcaaggacgt taacaatccg gttccagcta tgatgattag 4500
taataacggt tcagagagt gaaataatgt tagcgggttg caaaacactg cgtttcagca 4560
tcatacagga atggatttga gcttatttga gcaacagcag gagaggtacg ttggttatta 4620
caatggagga aacttgtcta ccgagagtag taggggttgt ttcaaacaag aggaggaaca 4680
acaacacttc ttgagaaact cgccgagtag catgactaat gttgatcatc atagctcgac 4740
ctctgatgat tctgttaccg ttgttggaag tgttggttag tatggtggtt atcaaggatt 4800
cgcaatccct gttggaacat cggttaatta cgatcccttt actgctgctg agattgctta 4860
caacgcaaga aatcattatt actatgctca gcatcagcaa caacagcaga ttcagcagtc 4920
gccgggagga gattttccgg tggcgatttc gaataacat agctctaaca tgtactttca 4980
cggggaagggt ggtggagaag gggctccaac gttttcagtt tgggaacgaca cttagaaaaa 5040
taagtaaaag atcttttagt tgtttgcttt gtatgttgcg aacagtttga ttctgttttt 5100
ctttttccct tttttgggta attttcttat aacttttttc atagtttcga t 5151

```

&lt;210&gt; 7

&lt;211&gt; 581

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 7

```

Met Asn Asn Trp Leu Gly Phe Ser Leu Ser Pro His Asp Gln Asn His
  1          5          10         15

His Arg Thr Asp Val Asp Ser Ser Thr Thr Arg Thr Ala Val Asp Val
          20          25          30

Ala Gly Gly Tyr Cys Phe Asp Leu Ala Ala Pro Ser Asp Glu Ser Ser
          35          40          45

Ala Val Gln Thr Ser Phe Leu Ser Pro Phe Gly Val Thr Leu Glu Ala
  50          55          60

Phe Thr Arg Asp Asn Asn Ser His Ser Arg Asp Trp Asp Ile Asn Gly
  65          70          75          80

Gly Ala Cys Asn Thr Leu Thr Asn Asn Glu Gln Asn Gly Pro Lys Leu
          85          90          95

Glu Asn Phe Leu Gly Arg Thr Thr Thr Ile Tyr Asn Thr Asn Glu Thr
        100        105        110

Val Val Asp Gly Asn Gly Asp Cys Gly Gly Gly Asp Gly Gly Gly Gly
        115        120        125

Gly Ser Leu Gly Leu Ser Met Ile Lys Thr Trp Leu Ser Asn His Ser
        130        135        140

Val Ala Asn Ala Asn His Gln Asp Asn Gly Asn Gly Ala Arg Gly Leu
        145        150        155        160

Ser Leu Ser Met Asn Ser Ser Thr Ser Asp Ser Asn Asn Tyr Asn Asn
        165        170        175

Asn Asp Asp Val Val Gln Glu Lys Thr Ile Val Asp Val Val Glu Thr
        180        185        190

Thr Pro Lys Lys Thr Ile Glu Ser Phe Gly Gln Arg Thr Ser Ile Tyr
        195        200        205

Arg Gly Val Thr Arg His Arg Trp Thr Gly Arg Tyr Glu Ala His Leu
        210        215        220

Trp Asp Asn Ser Cys Lys Arg Glu Gly Gln Thr Arg Lys Gly Arg Gln
        225        230        235        240

Val Tyr Leu Gly Gly Tyr Asp Lys Glu Glu Lys Ala Ala Arg Ala Tyr

```

SUBSTITUTE SHEET (RULE 26)

09980364.040802

11/13

245										250					255				
Asp	Leu	Ala	Ala	Leu	Lys	Tyr	Trp	Gly	Pro	Thr	Thr	Thr	Thr	Asn	Phe				
			260					265						270					
Pro	Leu	Ser	Glu	Tyr	Glu	Lys	Glu	Val	Glu	Glu	Met	Lys	His	Met	Thr				
		275					280					285							
Arg	Gln	Glu	Tyr	Val	Ala	Ser	Leu	Arg	Arg	Lys	Ser	Ser	Gly	Phe	Ser				
	290					295					300								
Arg	Gly	Ala	Ser	Ile	Tyr	Arg	Gly	Val	Thr	Arg	His	His	Gln	His	Gly				
305					310					315					320				
Arg	Trp	Gln	Ala	Arg	Ile	Gly	Arg	Val	Ala	Gly	Asn	Lys	Asp	Leu	Tyr				
				325					330					335					
Leu	Gly	Thr	Phe	Gly	Thr	Gln	Glu	Glu	Ala	Ala	Glu	Ala	Tyr	Asp	Ile				
			340					345					350						
Ala	Ala	Ile	Lys	Phe	Arg	Gly	Leu	Ser	Ala	Val	Thr	Asn	Phe	Asp	Met				
		355					360					365							
Asn	Arg	Tyr	Asn	Val	Lys	Ala	Ile	Leu	Glu	Ser	Pro	Ser	Leu	Pro	Ile				
	370					375					380								
Gly	Ser	Ser	Ala	Lys	Arg	Leu	Lys	Asp	Val	Asn	Asn	Pro	Val	Pro	Ala				
385					390					395					400				
Met	Met	Ile	Ser	Asn	Asn	Val	Ser	Glu	Ser	Ala	Asn	Asn	Val	Ser	Gly				
				405					410					415					
Trp	Gln	Asn	Thr	Ala	Phe	Gln	His	His	Gln	Gly	Met	Asp	Leu	Ser	Leu				
			420					425					430						
Leu	Gln	Gln	Gln	Gln	Glu	Arg	Tyr	Val	Gly	Tyr	Tyr	Asn	Gly	Gly	Asn				
		435					440					445							
Leu	Ser	Thr	Glu	Ser	Thr	Arg	Val	Cys	Phe	Lys	Gln	Glu	Glu	Glu	Gln				
	450					455					460								
Gln	His	Phe	Leu	Arg	Asn	Ser	Pro	Ser	His	Met	Thr	Asn	Val	Asp	His				
465					470					475					480				
His	Ser	Ser	Thr	Ser	Asp	Asp	Ser	Val	Thr	Val	Cys	Gly	Asn	Val	Val				
				485					490					495					
Ser	Tyr	Gly	Gly	Tyr	Gln	Gly	Phe	Ala	Ile	Pro	Val	Gly	Thr	Ser	Val				
			500					505					510						
Asn	Tyr	Asp	Pro	Phe	Thr	Ala	Ala	Glu	Ile	Ala	Tyr	Asn	Ala	Arg	Asn				
		515					520					525							
His	Tyr	Tyr	Tyr	Ala	Gln	His	Gln	Gln	Gln	Gln	Gln	Ile	Gln	Gln	Ser				
	530					535						540							
Pro	Gly	Gly	Asp	Phe	Pro	Val	Ala	Ile	Ser	Asn	Asn	His	Ser	Ser	Asn				
545					550					555					560				
Met	Tyr	Phe	His	Gly	Glu	Gly	Gly	Gly	Glu	Gly	Ala	Pro	Thr	Phe	Ser				
				565					570					575					
Val	Trp	Asn	Asp	Thr															
				580															

209040-49E08660

SUBSTITUTE SHEET (RULE 26)

12/13

<210> 8  
 <211> 30  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 8  
 gaggcagcgg tcggatcgta acagtactct

30

<210> 9  
 <211> 30  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 9  
 cataaggaga gagagaaaag cctaaccagt

30

<210> 10  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 10  
 accaagaact cgttagatc

19

<210> 11  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 11  
 aacgcatata actaaagatc

20

<210> 12  
 <211> 26  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 12  
 ccatggatcc agagacgaag cgaaac

26

<210> 13  
 <211> 26  
 <212> DNA  
 <213> Artificial Sequence

<220>

13/13

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 13

actccatgga taataactgg ttaggc

26

&lt;210&gt; 14

&lt;211&gt; 26

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 14

aaattctcaa gctttggtcc atcttg

26

09980364.010802